

# ITRC's Assessment of Remediation Risk Management

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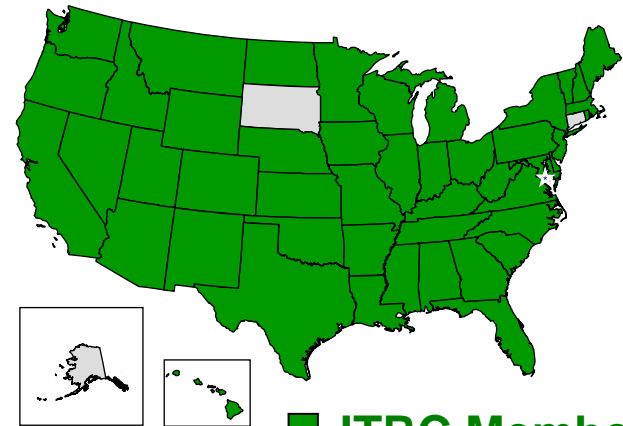
# ITRC ([www.itrcweb.org](http://www.itrcweb.org)) – Shaping the Future of Regulatory Acceptance

- Network
  - State regulators
  - Federal government
  - Industry
  - Consultants
  - Academia
  - Community stakeholders
- Documents
  - Technical and regulatory guidance documents
  - Technology overviews
  - Case studies
- Training
  - Internet-based
  - Classroom

Host Organization



ITRC State Members



Federal Partners



DOE



DOD

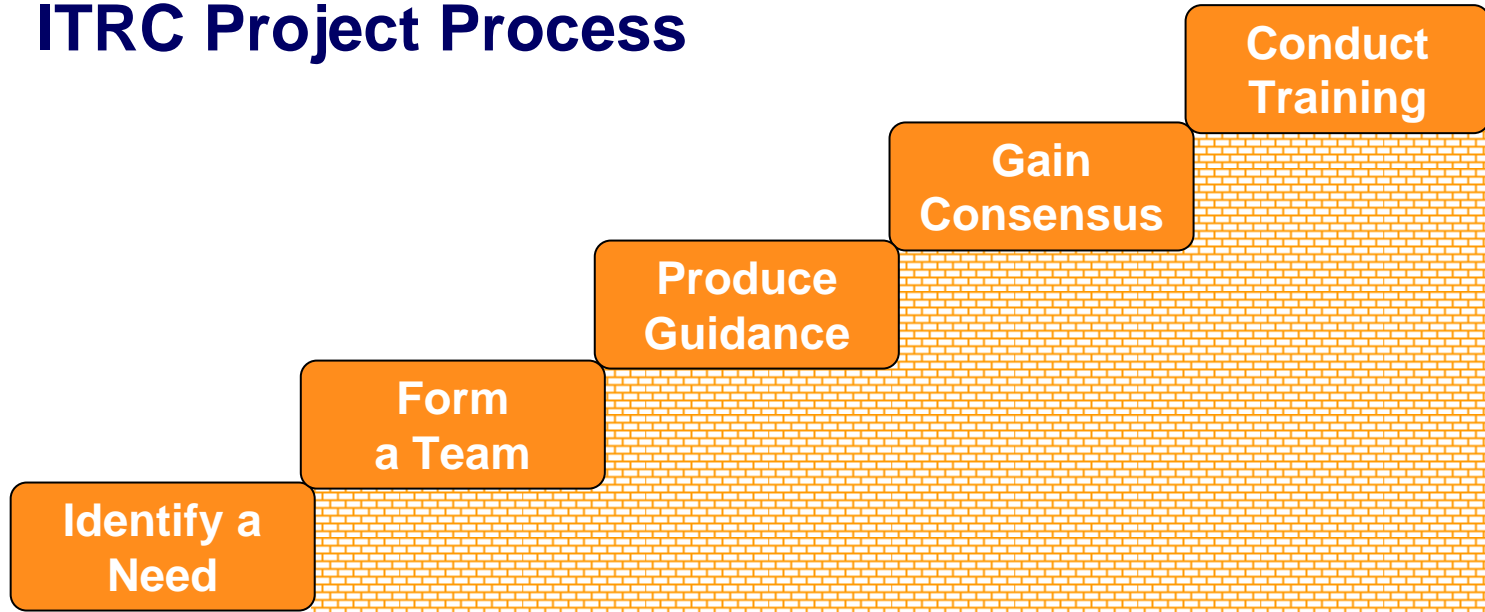


EPA

# RRM Team & the ITRC



## ITRC Project Process



# RRM - Definition

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- Remediation risk management (RRM) is a process through which all risks related to the remediation process - remedy selection, execution and completion - are holistically addressed in order to minimize decision uncertainties in the cleanup process.

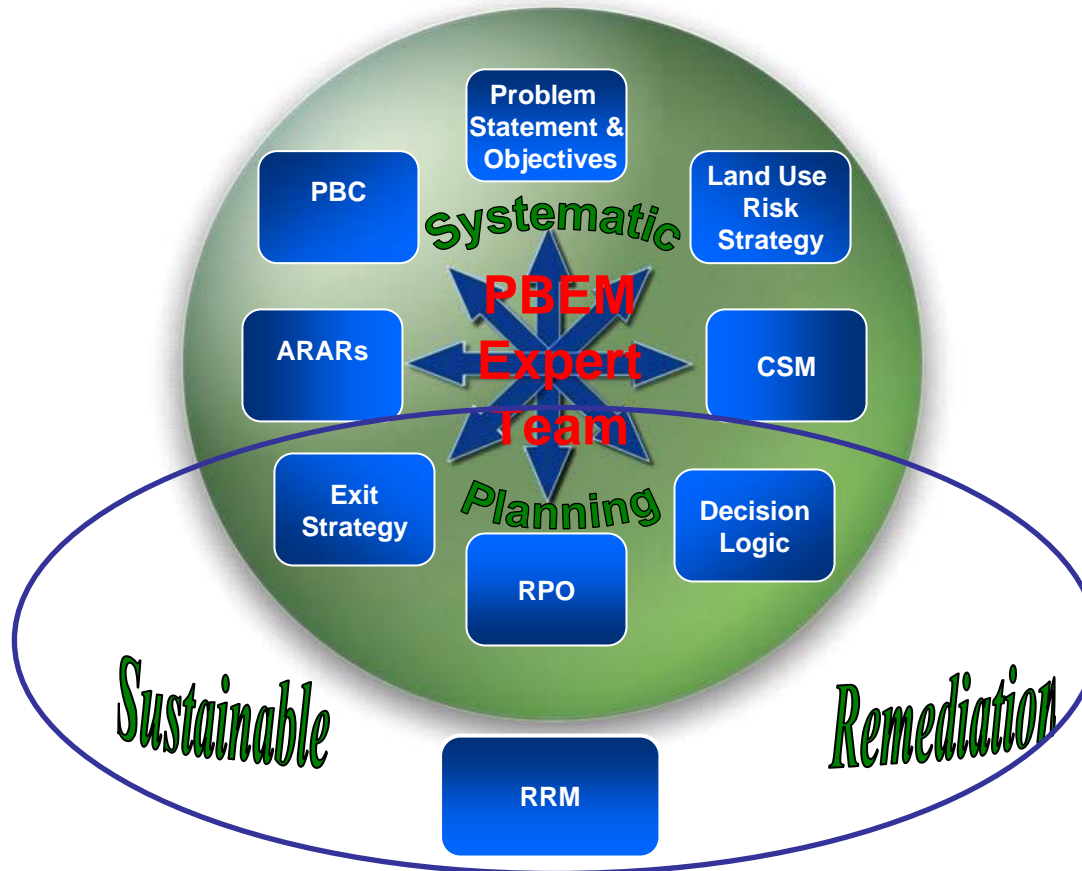
# RRM – Definition (continued)

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**Issues to be considered for RRM evaluation:**

- **Remediation technology feasibility**
- **Remedy selection**
- **Remedy construction, operation, and monitoring**
- **Safety and ecological impact**
- **Costs & Schedules**
- **System performance and operations**
- **Environmental consequences systems during operation**
- **Alternatives to active remediation**
- **Energy budget for remedy systems**
- **Sustainable restoration, etc.**

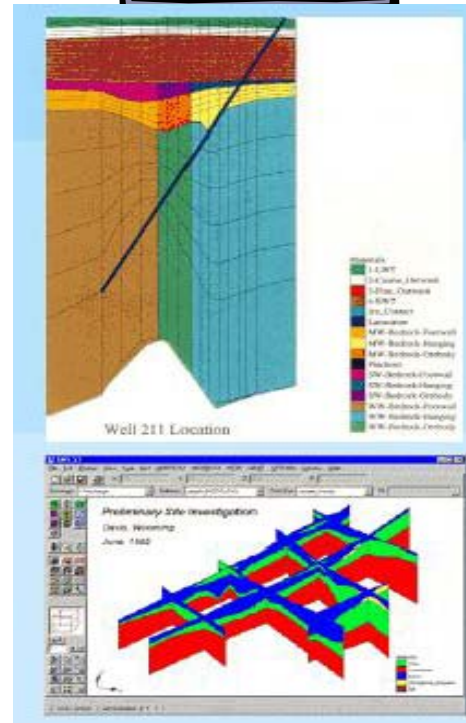
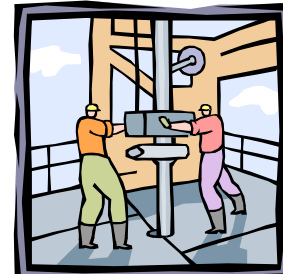
# RRM & Performance-Based Management & Sustainable Remediation



# Data Gathering

## ■ Data from different sources

- Geological
- Hydrogeology
- Chemical
- CSM
- Engineering
- Financial
- Human Resources



# System Performance

- **System selection**
- **System installation**
- **System operation**



# System Performance Evaluation

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- How efficient are the treatment processes?
- How to maintain high performance while keeping costs low?
- How much is the energy consumption?
- How much consumables are being used?
- How much process derived waste is generated?
- How is the waste being disposed?

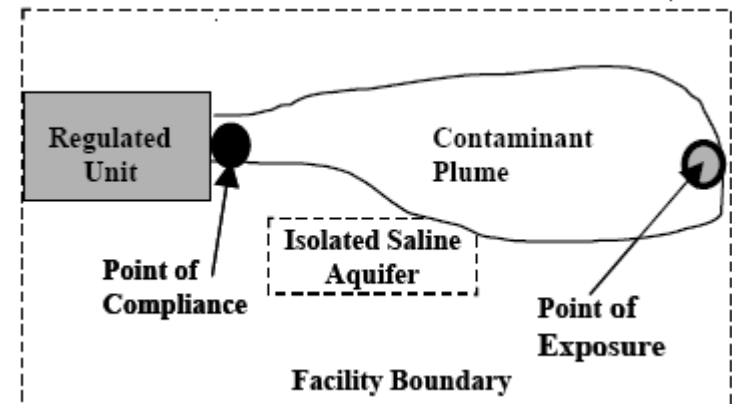
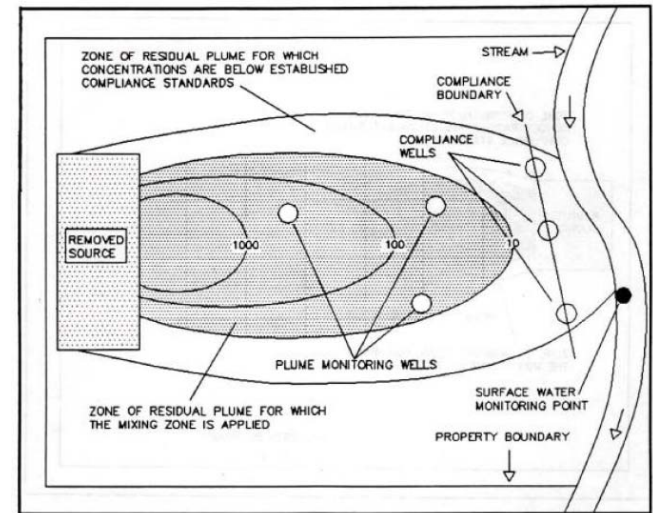
# Environmental Considerations

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- **What is the total environmental budget**
- **Energy Budget**
- **Green solutions**
- **Effects on human health**
- **Effects on ecology**

# Alternatives to Active Remediation Reviewed by RRM Team

- **Alternative Contamination Levels**
- **TI Waivers**
- **Mixing Zone Application**
- **Long term monitoring**
- **Institutional controls**



# Energy Budget

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- Remediation Goal – to meet the cleanup goals
- Can we do it efficiently
- Conservation of energy
- Long term monitoring
- Institutional controls
- Energy Calculator



# New Sustainable/Green Remediation Project

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- **New ITRC project proposed in 09 will look at remediation impacts including**
  - **Reduction in green house gases**
  - **Use of alternative fuels**
  - **Use of renewable and sustainable energy sources during remediation**
  - **Solar, wind, landfill gas,**
  - **Integration of renewable energy resources during remedy implementation**



# ITRC RRM Team Milestones

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- **State Survey of RRM Issues Completed – May 08**
- **Produced annotated outline of RRM TechReg document – June 08**
- **Draft chapters reviewed – October 08**
- **TechReg draft peer-reviewed – January 09**
- **Simultaneous development of Internet-based training – Spring 09**
- **Publish RRM document and provide internet training – Summer 09**

# RRM Summary

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- **RRM will reduce remedy uncertainties**
- **RRM will minimize remediation derived wastes**
- **Waste destruction – not transfer is achieved through RRM**
- **Encourages pursuit of sustainable remediation alternatives**
- **Application of alternatives to active remediation systems will conserve resources**
- **RRM will benefit overall environment and achieve cleanups protective of human health and the environment**